

UNITED STATES PATENT OFFICE

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GAS-CARTRIDGE-FIRING DEVICE

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This invention relates to improvements in gas cartridge firing devices and it consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The primary object of the invention is to provide a small compact device for firing chemical gas cartridges such as produce tear or like gases, employed in subduing unruly persons.

Another object of the invention is to provide a device of this kind which may be carried in the vest pocket or in a hand bag in the manner of a fountain pen, ready for instant use when the occasion so demands.

Still a further object of the invention is to provide a device of this kind which may be easily loaded and carried cocked, ready for instant use without danger of accidental-firing or discharge while so carried.

Still another object of the invention is to provide a device of this kind which is simple in construction, is safe in use and comprises but a few parts which are so correlated that they will not readily get out of order.

These objects of the invention as well as others, together with the many advantages thereof will more fully appear as I proceed with my specification.

In the drawing:—

Fig. 1 is a perspective view of a chemical gas cartridge firing device, embodying the preferred form of my invention.

Fig. 2 is a longitudinal vertical sectional view through the device on an enlarged scale with the parts in the cocked position.

Fig. 3 is a view similar to Fig. 2 with the parts in the position they occupy after firing a cartridge.

Fig. 4 is a perspective view of the firing pin plunger of the device.

Fig. 5 is a perspective view of a plunger guide tube embodied in the device.

Referring now in detail to that embodiment of the invention illustrated in the accompanying drawing, 1 indicates the body or casing of the device and 2 indicates the barrel detachably connected thereto to simulate in all appearances, a modern fountain pen. The casing is tubular and is interiorly threaded at

both its top and bottom ends as best shown in Figs. 2 and 3. Threaded into the bottom end of the casing so as to be positioned at a point spaced from the extremity thereof is a breech block 3 having an axially disposed opening 4 therein. The top end of the barrel is exteriorly threaded so as to be detachably screwed into the bottom end of the casing and said end of the barrel is adapted to receive a center fire, chemical gas cartridge 5. When the cartridge is in the barrel and the barrel is screwed into the casing, the head of the cartridge is securely held in place between the breech block and barrel end as best shown in Figs. 2 and 3. By unscrewing the barrel the empty cartridge may be removed and a new one substituted therefor.

In the top end of the casing is located a guide tube 6. Said tube has a head plug 7 screwed into the top end of the casing and a body 8 which extends down into the casing a suitable distance. In one side of said tube is a longitudinal slot 9 which opens through both ends of the same and in the head plug is an axially disposed opening 10. Longitudinally slidable in said tube is a plunger indicated as a whole by the numeral 11 in Fig. 4. Said plunger includes a tubular body 12 to slide in the guide tube and on the bottom end of the body is a head 13 of a diameter snugly fitting the interior of the casing. The top end of said body 12 has an axially disposed opening 14 therein and also carries a stud or rib 15 which engages in the slot 9 in the guide tube. Thus the plunger while longitudinally movable in the casing and guide tube cannot turn therein. The bottom end of said plunger is closed by a plug 16 swaged therein and this plug carries a firing pin 17 adapted to pass through the opening 4 in the breech block to engage and explode the cartridge.

In the head 13 of the plunger and opening through that side of the plunger opposite the rib 15 is a port 18 in which a spring pressed ball or trigger 19 is disposed. Said ball in one position of the plunger engages in but projects part way through a burred over opening 20 in the casing in a manner holding the plunger cocked as will soon appear.

In the plunger body is a cocking stem 21 which has a head 22 on its bottom end that snugly fits the interior of the plunger body, said stem passing through and having a sliding bearing in the openings 10 and 14 respectively before mentioned. A spring 23 surrounds the stem 21 between the head 22 and top end of the plunger body and on the top end of said stem, without the body is a knob 24. This knob which is of a diameter approximating that of the casing is knurled so that it may be conveniently grasped in cocking the plunger.

Surrounding the body of the guide tube 6 is an expansive helical spring 25 which engages at one end against the head 7 of the guide tube 6 and engages at its other end against the head 13 of the plunger. Said spring 25 which has a greater expansive tendency than the spring 23 normally urges the plunger toward the breech block.

On the casing is provided a clip indicated as a whole as at 26 for securing the device in a vest or coat pocket, in the manner of a clip for the same purpose as used in fountain pens. This clip includes a band 27 which partially surrounds the casing and has therein a slot 28 in which a pin 29 on the casing engages in a manner limiting the turning movement of the clip on said casing. A spring finger 30 extending downwardly along the casing is carried by the band 27 and this spring finger which is adapted to engage the outer portion of a garment pocket may be turned from a position covering the opening 20 in the casing to a position exposing the same as best shown in Fig. 1.

To load the device, the barrel is unscrewed from the casing and a cartridge is positioned in the proper barrel end which is then screwed into the associated casing end. To cock the device ready for use the knob 24 is grasped and pulled outwardly. This, of course, first compresses the spring 23 and when said spring is thus compressed, a further pull on the stem will cause the plunger to be moved toward the top end of the casing, compressing the spring 25. When the spring pressed ball or trigger 19 comes into line with the burred opening 20 in the casing, said ball will snap into it. By reason of the formation of the burred opening the greater portion of said ball is disposed in said opening so that while it may not pass entirely therethrough, it passes far enough thereinto so that the plunger is held against any movement under the action of the spring 25. By reason of the rib 15 and slot 9, the ball will always be held in the proper position to enter said opening. Thus the plunger is cocked and when the knob 24 is released the stem is retracted until said knob engages the guide tube head or plug and this without releasing the plunger. The device which is now cocked as shown in Fig. 2 is ready for firing and by

turning the clip 26 in the proper direction on the casing the spring finger will cover the trigger as shown in dotted lines in Fig. 1. When cocked in this manner, the device may be carried in a vest pocket or in a hand bag without danger of accidental firing as the trigger is safely covered up by the spring finger.

Assume that the device, already cocked is carried in the vest pocket and an occasion arises which demands immediate use of the device. It is withdrawn from the pocket as one withdraws a fountain pen and the clip is turned to expose the trigger. With the barrel pointed in the proper direction, a slight thumb pressure is exerted on the exposed part of the trigger and so soon as its center has been pushed inwardly of the plane of the interior surface of the casing, the spring 25 will suddenly expand to move the plunger forcefully toward the breech block end of casing when the firing pin engages the percussion cap of the cartridge and explodes the same. This causes a discharge of gas from the muzzle end of the barrel which through its action renders those in the immediate vicinity helpless so far as violence or the like is concerned. To reload the device, the barrel is removed and a new cartridge substituted for the used one, then the barrel is replaced and the device is ready for cocking for future use.

The device is especially adapted for use by officers of the peace in quelling unruly persons and is convenient for use by persons as a protection against assaults and violences. It is small and compact and is so simple to load and operate that those of average intelligence will have no difficulty therewith.

To prevent the use of the device for the firing of a regular bullet cartridge, the muzzle end 2^a of the barrel is choked or made tapered as shown and hence the device cannot be used for any other purpose than that originally intended.

While in describing my invention, I have referred in detail to the form, construction and arrangement of the parts, the same is considered as by way of illustration only except as may be specifically pointed out in the appended claims.

I claim as my invention:

1. A device of the kind described embodying therein a tubular casing, a guide tube in said casing, a spring pressed plunger longitudinally movable in said guide tube, means for cocking the plunger, means carried by a part of the plunger and engaging in an opening in the casing for locking the plunger in cocked position, said last mentioned means being manually operable to release the plunger to firing position, a firing pin carried by the plunger for engaging a chemical cartridge to release the chemical therefrom in the form of a gas and means capable of a limited turning movement on the cas-

ing and including a finger for covering and uncovering said plunger locking means.

2. A device of the kind described embodying therein a casing, a chemical cartridge receiving barrel detachably connected thereto, a spring pressed firing plunger disposed in the casing, means comprising a spring pressed stem movable in the plunger and extending through the end of the casing for cocking the plunger and means for automatically locking the plunger as it reaches cocked position, said last mentioned means being manually releasable.

3. A device of the kind described embodying therein a tubular casing, a breech block in one end of said casing, a chemical cartridge receiving barrel detachably connected to said last mentioned end of the casing, a spring pressed plunger in said casing carrying a firing pin, a plunger cocking stem disposed within the plunger and extending through the other end of the casing and manually releasable means automatically operating to lock the plunger as it reaches cocked position.

4. A device of the kind described embodying therein a tubular casing, a breech block in one end of said casing, a chemical cartridge receiving barrel detachably connected to said last mentioned end of the casing, a spring pressed plunger in said casing carrying a firing pin, a plunger cocking stem disposed within the plunger and extending through the other end of the casing and a spring pressed member disposed transversely of the plunger and acting to enter an opening in the casing as the plunger reaches cocked position to lock the same in said position, said last mentioned means being capable of actuation from outside the casing to release the plunger.

5. A device of the kind described embodying therein a tubular casing, a breech block in one end of said casing, a chemical cartridge receiving barrel detachably connected to said last mentioned end of the casing, a spring pressed plunger in said casing carrying a firing pin, a plunger cocking stem disposed in the plunger and extending through the other end of the casing, a spring surrounding a part of said stem for normally urging it in one direction in said plunger, manually releasable means automatically operating to lock the plunger as it reaches cocked position and means on the casing movable to cover and uncover said manually releasable means.

6. A device of the kind described embodying therein a tubular casing, a breech block in one end of the casing, a barrel detachably connected to said last mentioned end of the casing, a tubular guide member in the other end of said casing, a spring pressed plunger bearing at one end in said guide, a setting stem operatively connected to said plunger

and extending through a part of said guide, and a spring pressed member carried by and extending transversely of said plunger and adapted to so engage a part of the casing as to lock the plunger in cocked position, said spring pressed member being capable of being actuated from the outside of the casing for releasing the plunger.

7. In a device of the kind described, a tubular casing, a tubular guide disposed in one end thereof and having a longitudinal slot in one side thereof, a tubular plunger slidable in said guide and having a part disposed in said slot, a spring surrounding said guide and engaged at one end with said plunger, a spring pressed ball disposed in and movable laterally of said plunger and adapted in one position to so engage a part of the casing as to lock the plunger against the action of the spring when said plunger is cocked, and a spring pressed stem for cocking the plunger having a part disposed in said plunger and another part passing through the end of said guide and carrying a knob without the casing.

In testimony whereof, I have hereunto set my hand, this 20th day of June, 1928.

SCOTT M. ABBOTT.

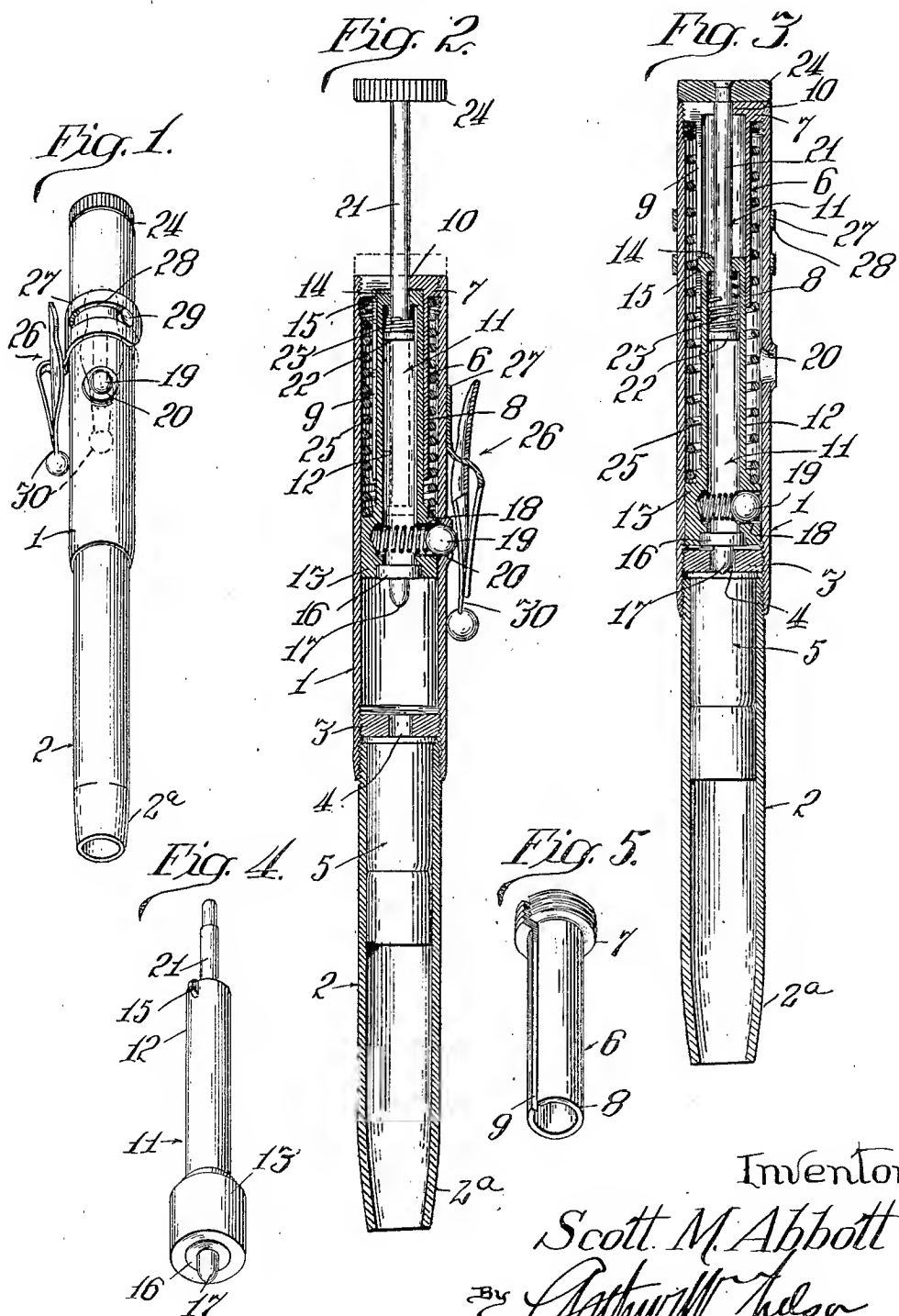
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